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Independent claim 1 of the application recites "...An optical communication system comprising a first number M of fixed wavelength lasers coupled to a second number N of external modulators (N less than M) through a photonic cross-connect switch, wherein the photonic cross-connect switch is capable of routing the optical carriers of any N of the M fixed wavelength lasers to the N external modulators while maintaining the polarity of the N optical carriers routed to the N external modulators, and wherein the N external modulators are coupled to N data signals for producing N optical data streams from the N optical carriers and the N data signals..."

Independent claim 17 recites "...A method for producing optical data streams in an optical communication system, the method comprising ... maintaining a first number M fixed wavelength lasers, each fixed wavelength laser having an output of a different wavelength that the other fixed wavelength lasers ... maintaining a second number N external modulators, wherein the second number N is less than the first number M ... routing optical carriers from each of a predetermined N of the M fixed wavelength lasers to a different one of the N external modulators while maintaining the polarity of the optical carriers; and feeding a data signal to each of the N external modulators to produce N optical data streams at N specific wavelengths..."

As will be described below, no such structure or method is shown or suggested in the combination of Inoue and Wang.

Inoue:

Inoue is entitled "Polarization Direction Switching Unit," and its teachings are difficult to interpret due to the fact that it is written in Japanese. The translated portion of Inoue states only that its purpose is "to evaluate a polarization characteristic of a waveguide type optical part

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precisely over a wide range of light wave length by installing one fiber of two polarization maintaining optical fibers on the other fiber in a condition being twisted by 90 degrees....A polarization direction switching unit is composed of N (optional positive integer) \times two optical space switches 3, a 2×2 polarization holding photocoupler 12 and two polarization maintaining optical..."

The Examiner maintains that Inoue teaches "a fixed number of M wavelength lasers (20-22) coupled to a second number N of external modulators (13) through a cross-connect switch..." Applicant's respectfully submit that the Examiner is reading more into Inoue than what is taught.

Although it is unclear what the element 13 is in Inoue, Applicants note that it has only one input and one output. A modulator, as it is known in the art, is used to blend two or more data stream together, while a demodulator separates the data. As the element 13 includes only one input, it cannot be blending together data, and thus cannot read on the claimed element of N 'external modulators'. Rather, it would be more logical that the element 13 is what is being described as 'two polarization maintaining optical...' before the translation is cut off (as the elements 13 feed the signal into the polarization photo holding coupler 12). If that is the case, then the 'polarization maintaining' function, which seeks to hold a value of the data, is vastly different from the claimed 'modulator' function. Thus, Applicants submit that Inoue fails to describe 'N external modulators' as recited in the claims.

In addition, Applicants submit that it is highly unlikely that the elements 20, 21 and 22 of Inoue are 'fixed wavelength lasers' as recited in the claims. Rather, Applicants note that Inoue refers to a 'wide range of light wavelength', yet shows only three lasers. Applicants would

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submit that the wording of Inoue infers that the lasers are in fact variable wavelength lasers capable of operating over the 'wide range of light wave length' as stated in the specification.

Thus, Inoue fails to describe or suggest several limitations of the claimed invention.

The Examiner states, at page 1 of the office action:

"... The reference does not disclose the N external modulators are coupled to N data signals for producing N optical data streams from the N optical carriers and the N data signals. However, modulators 13 of Inoue et al is a polarizer for controlling the polarization of light in the waveguides, and it is well known in the art to provide a signal to control the polarization of light in an optical waveguide (see Fig. 16(a) and lines 30-50 of column 22 of Wang et al.) Therefore, it would have been obvious to one of ordinary skill in the art to provide a signal the polarizer of Inoue et al for controlling the polarization of the waveguide..."

Applicants note that Wang describes, at the portion of the text cited by the Examiner a "mode converter from which the output polarization TM or TE can be switched by application of a bias electric field. Such a mode conversion device can also be used to combine two signals originally entering the waveguides as TE and TM modes into a single mode TE or TM for signal processing..." (Wang 34-37). ["there is shown ... a polarization converter..."]. Thus applicants submit that the Examiner is mis-reading the Wang reference, which in fact *converts* the polarization of the signal, rather than performing the "polarization maintaining" function of Inoue.

Accordingly, for at least the reasons that the combination of Inoue and Wang fail to teach or describe several of the limitations of the claims, the rejection under 35 U.S.C. §103 is overcome and should be withdrawn.

No motivation for the modification suggested by the Examiner

Further, Applicant submit that the Examiner has not properly shown a reason why Inoue would be motivated to modify its teachings to reach the claimed invention. It is well established

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that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also *In re Lee*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002).

A statement that modifications of the prior art to meet the claimed invention would have been " 'well within the ordinary skill of the art at the time the claimed invention was made' " because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). See also *In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1318 (Fed. Cir. 2000)

Thus, the Examiner's statement on page 1 that "it is well known in the art to provide a signal to control the polarization of light..." is insufficient to justify a rejection under 35 U.S.C. §103, and thus the rejection of the claims cannot stand.

Accordingly, for at least the above reasons, the rejections of independent claims 1 and 17 are overcome and should be withdrawn. Dependent claims 2-9 and 18 serve to add further patentable limitations to their parent claims, and are allowable for at least the reasons set forth with regard to their parent claims.

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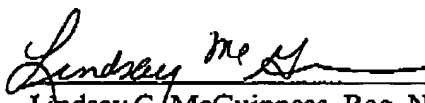
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Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Lindsay G. McGuinness, Applicants' Attorney at 978-264-6664 so that such issues may be resolved as expeditiously as possible.

For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,

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Date


Lindsay G. McGuinness, Reg. No. 38,549
Attorney/Agent for Applicant(s)
Staubing McGuinness & Manaras LLP
125 Nagog Park Drive
Acton, MA 01720
(978) 264-6664

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